

Application No. : 10/722,206
Filed : November 24, 2003

IN THE CLAIMS

Please cancel Claims 1-45 and 48-50 without prejudice, and add new Claims 51-117 as follows:

1. – 45. (Cancelled)

46. (Original) Apparatus adapted for operation within a multi-channel HFC cable distribution network, said apparatus comprising:

a digital processor;

a storage device operatively coupled to said processor;

middleware adapted to run on said processor;

a plurality of software entities comprising at least (i) an event registration entity, (ii) an event submission entity, and (iii) a network interface entity; and

at least one software application adapted to run on said processor;

wherein said apparatus is further configured, in cooperation with said middleware,

to:

identify an event relating to the operation of said apparatus from information received via at least one of said submission and registration entities;

store information relating to said event within said storage device; and

selectively provide external access to said stored information via said network interface entity.

47. (Original) The apparatus of Claim 46, further comprising:

an event database;

a priority event reporting entity; and

a resource depletion registration entity;

wherein said event database, event reporting entity, and said resource depletion entity are all in operative communication with said middleware.

48. -50. (Cancelled)

51. (New) A method of operating client equipment in operative communication with a content-based network, said equipment comprising at least at least a first application

and a second application, the method comprising:

- generating first data relating to the operation of said equipment;
- receiving, at said first application, said first data;
- evaluating said first data; and
- selectively storing at least a portion of said first data within a storage device;

wherein:

- said first application comprises an OCAP-compliant monitor application, and at least said acts of receiving and evaluating are performed using software entities associated with said monitor application; and

- said second application initiates said act of generating due to at least one event associated with said second application.

52. (New) The method of Claim 51, wherein said at least one event associated with said second application comprises generating an error selected from the group consisting of: (i) catastrophic errors; and (ii) recoverable errors.

53. (New) The method of Claim 51, wherein said at least one event is taken from the group consisting of: (i) informational message types; (ii) recoverable error types; (iii) catastrophic error types; (iv) reboot events; and (v) resource depletion events.

54. (New) The method of Claim 51, wherein said act of evaluating said first data comprises:

- determining the priority of said at least one event; and
- selectively initiating at least one action based on said determined priority.

55. (New) The method of Claim 54, wherein said act of selectively initiating at least one action comprises generating a message for transmission to another entity.

56. (New) The method of Claim 51, wherein said network comprises a multi-channel distribution network having at least one hybrid fiber coax (HFC) portion.

57. (New) A method of operating CPE within a content-based network, said CPE comprising a resource, a trusted OCAP-compliant Java-based application adapted to communicate with a network entity, and a plurality of other software applications, the method comprising:

- evaluating said resource using said trusted application; and

in response to said act of evaluating, selectively controlling the operation of one or more of said plurality of other applications;

wherein said act of evaluating comprises evaluating said resource under at least partial control of said network entity.

58. (New) The method of Claim 57, wherein said act of evaluating comprises comparing a parameter associated with said resource to a predetermined value, and said act of selectively controlling comprises utilizing at least a result of said act of comparing to initiate destruction or disabling of said one or more applications.

59. (New) The method of Claim 58, wherein said act of comparing to a predetermined value comprises accessing a stored profile of said CPE, said profile comprising said predetermined value.

60. (New) The method of Claim 57, wherein said act of evaluating comprises evaluating the requirements of said resource by said one or more applications, and said act of selectively controlling comprises utilizing at least a result of said act of evaluating to initiate destruction or disabling of said one or more applications.

61. (New) CPE adapted for operation within a cable network, said CPE comprising at least one resource, a trusted monitor application adapted to control at least one function within said CPE, and a plurality of software applications, said CPE operating according to the method comprising:

evaluating said at least one resource using said monitor application; and

in response to said act of evaluating, selectively controlling the operation of one or more of said plurality of applications.

62. (New) The CPE of Claim 61, wherein said monitor application is further adapted to interface with a network entity.

63. (New) The CPE of Claim 62, wherein said network entity comprises a software component disposed external to said CPE.

64. (New) The CPE of Claim 61, wherein at least a portion of said plurality of applications are downloaded to said CPE from time to time via an external network interface.

65. (New) The CPE of Claim 61, wherein said monitor application is adapted to be

at least partly controlled by an external entity.

66. (New) The CPE of Claim 65, wherein said external entity comprises a head-end supervisory process or its proxy.

67. (New) The CPE of Claim 61, wherein said act of evaluating is performed substantially in response to an event notification provided to said monitor application.

68. (New) The CPE of Claim 67, wherein said event notification is generated by a software object adapted to handle a plurality of different event types.

69. (New) A head-end apparatus for use in a cable network, comprising at least one server having a software process running thereon, said software process being adapted to selectively interface with at least one client device and retrieve logged error data therefrom;

wherein said software process is rendered in an object-oriented language and is adapted to interface with a trusted monitor application disposed on said client device, said software process further being operable to cause said monitor application to control at least one aspect of the operation of said client device.

70. (New) The apparatus of Claim 69, wherein said control of said at least one aspect is initiated by said software process in response to evaluation of said retrieved error data by said process.

71. (New) An error logging system adapted for use on a set-top box having OCAP-compliant middleware, comprising:

a plurality of entities, said plurality comprising:

- an event registration entity;
- an event submission entity;
- a priority event reporting entity;
- a network retrieval entity;
- a resource depletion registration entity; and
- an event database;

wherein said middleware comprises at least one of said plurality of entities.

72. (New) The system of Claim 71, wherein at least one of said entities comprises objects within an object-oriented programming environment.

Application No. : 10/722,206
Filed : November 24, 2003

73. (New) The system of Claim 72, wherein said network retrieval entity comprises at least a portion of a client-server architecture.

74. (New) The system of Claim 72, wherein said resource depletion entity is adapted to selectively destroy or disable one or more running applications according to a prioritization scheme.

75. (New) A method of conducting business via a cable network having a plurality of client devices operatively coupled thereto, said devices each having an event logging system comprising middleware running on said device, said middleware comprising a plurality of APIs, the method comprising:

distributing at least one software application to ones of said plurality of devices;
running said at least one software application on at least one of said devices to which it was distributed;

receiving an event notification via said event logging system;
evaluating said notification to determine a corrective action; and
selectively controlling a function within said device using said event logging system, said function implementing at least a portion of said corrective action;

wherein said act of selectively controlling comprises controlling said function via one or more of said APIs.

76. (New) The method of Claim 75, further comprising selectively enabling said event logging system within a subset of said plurality of devices based on a subscription policy.

77. (New) The method of Claim 75, wherein said act of selectively controlling comprises controlling said function substantially via a network agent external to said device.

78. (New) The method of Claim 75, wherein said act of evaluating comprises:
transmitting first data relating to said notification to a remote entity;
analyzing said first data;
generating a corrective action; and
transmitting second data relating to said corrective action back to said device;
wherein said act of said act of selectively controlling is based at least in part on said

Application No. : 10/722,206.
Filed : November 24, 2003

second data.

79. (New) CPE for use in a content-based network, said CPE comprising an event handling system adapted to automatically log data relating to one or more events occurring within said CPE during operation and make such data available to a network agent, said event handling system comprising:

- (i) middleware adapted to register for and receive event notifications, and at least one API that can be used to access at least one hardware function within said CPE; and
- (ii) a storage device adapted to store said data;

wherein said middleware is further adapted to selectively analyze said event notifications to identify said data to be stored within said storage device.

80. (New) The CPE of Claim 79, wherein said CPE comprises a digital set-top box (DSTB), and said middleware is compliant with an OCAP (OpenCable) specification.

81. (New) The CPE of Claim 79, further comprising at least one radio-frequency (RF) tuner stage.

82. (New) The CPE of Claim 81, further comprising at least one demodulator stage adapted to demodulate QAM-modulated signals received via said at least one tuner stage.

83. (New) The CPE of Claim 79, wherein at least one of said one or more events comprises a Java exception.

84. (New) The CPE of Claim 79, wherein said middleware comprises a trusted application.

85. (New) The CPE of Claim 84, wherein said trusted application is OCAP (OpenCable) compliant.

86. (New) The CPE of Claim 79, further comprising at least one high-speed serialized bus protocol interface.

87. (New) The CPE of Claim 86, wherein said interface is compliant with a standard selected from the group consisting of: (i) Universal Serial Bus (USB); and (ii) IEEE-Std. 1394.

88. (New) The CPE of Claim 79, wherein at least one of said one or more events comprises an error or undesired event, and said apparatus further comprises at least

Application No. : 10/722,206
Filed : November 24, 2003

one computer program operative to implement corrective action based at least in part on the occurrence of said event.

89. (New) The CPE of Claim 88, wherein said implementation of said corrective action occurs based at least in part on signals or data received from a network entity.

90. (New) The CPE of Claim 88, wherein said corrective action is implemented substantially autonomously by said apparatus after notification of an event.

91. (New) Apparatus adapted for operation within a cable distribution network, said apparatus comprising:

processor means;

storage means operatively coupled to said processor;

middleware adapted to run on said processor means;

a plurality of software means comprising at least (i) an event registration entity, (ii) an event submission entity, and (iii) a network interface entity; and

at least one software application adapted to run on said processor means;

wherein said apparatus is further configured, in cooperation with said middleware,

to:

identify an event relating to the operation of said apparatus from information received via at least one of said submission and registration entities;

store information relating to said event using said storage means; and

selectively provide external access to said stored information via said network interface entity.

92. (New) The apparatus of Claim 91, further comprising:

an event database means;

a priority event reporting entity; and

a resource depletion registration entity;

wherein said event database means, event reporting entity, and said resource depletion entity are all in operative communication with said middleware.

93. (New) CPE adapted for operation within a cable network, said CPE comprising at least one resource, a trusted monitor means for controlling at least one

Application No. : 10/722,206.
Filed : November 24, 2003

function within said CPE, and a plurality of software applications, said CPE operating according to the method comprising:

evaluating said at least one resource using said monitor means; and
in response to said act of evaluating, selectively controlling the operation of one or more of said plurality of applications.

94. (New) The CPE of Claim 93, wherein said monitor means is further adapted to interface with a network means.

95. (New) The CPE of Claim 94, wherein said network means comprises a software component disposed external to said CPE.

96. (New) The CPE of Claim 93, wherein at least a portion of said plurality of applications are downloaded to said CPE from time to time via an external network interface.

97. (New) The CPE of Claim 93, wherein said monitor application is adapted to be at least partly controlled by an external entity.

98. (New) The CPE of Claim 97, wherein said external entity comprises a head-end supervisory process or its proxy.

99. (New) The CPE of Claim 93, wherein said act of evaluating is performed substantially in response to an event notification provided to said monitor means.

100. (New) The CPE of Claim 99, wherein said event notification is generated by a software object adapted to handle a plurality of different event types.

101. (New) A head-end apparatus for use in a cable network, comprising at least one serving means having a software process running thereon, said software process being adapted to selectively interface with at least one client device and retrieve logged error data therefrom;

wherein said software process is rendered in an object-oriented language and is adapted to interface with a trusted means for monitoring disposed on said client device, said software process further being operable to cause said means for monitoring to control at least one aspect of the operation of said client device.

102. (New) The apparatus of Claim 101, wherein said control of said at least one aspect is initiated by said software process in response to evaluation of said retrieved error

Application No. : 10/722,206.
Filed : November 24, 2003

data by said process.

103. (New) An error logging system adapted for use on a set-top box having OCAP-compliant middleware, comprising:

a plurality of means, said plurality comprising:

- means for event registration;
- means for event submission;
- means for priority event reporting;
- means for network retrieval;
- means for resource depletion registration; and
- an event database;

wherein said middleware comprises at least one of said plurality of means.

104. (New) The system of Claim 103, wherein at least one of said means comprises objects within an object-oriented programming environment.

105. (New) The system of Claim 104, wherein said means for network retrieval comprises at least a portion of a client-server architecture.

106. (New) The system of Claim 104, wherein said means for resource depletion registration is adapted to selectively destroy or disable one or more running applications according to a prioritization scheme.

107. (New) The system of Claim 46, wherein said apparatus comprises a digital set-top box (DSTB), and said middleware is compliant with an OCAP (OpenCable) specification.

108. (New) The system of Claim 46, further comprising at least one radio-frequency (RF) tuner stage.

109. (New) The system of Claim 108, further comprising at least one demodulator stage adapted to demodulate QAM-modulated signals received via said at least one tuner stage.

110. (New) The system of Claim 46, wherein said event comprises a Java exception.

111. (New) The system of Claim 46, wherein said at least one application comprises a trusted application.

Application No. : 10/722,206.
Filed : November 24, 2003

112. (New) The system of Claim 111, wherein said trusted application is OCAP (OpenCable) compliant.

113. (New) The system of Claim 46, further comprising at least one high-speed serialized bus interface means in data communication with said processor.

114. (New) The system of Claim 113, wherein said interface means is compliant with a standard selected from the group consisting of: (i) Universal Serial Bus (USB); and (ii) IEEE-Std. 1394.

115. (New) The system of Claim 46, wherein said event comprises an error or undesired event, and said apparatus further comprises at least one computer program operative to implement corrective action based at least in part on the occurrence of said event.

116. (New) The system of Claim 115, wherein said implementation of said corrective action occurs based at least in part on signals or data received from a network entity, said network entity having accessed said stored information via said network interface.

117. (New) The system of Claim 115, wherein said corrective action is implemented substantially autonomously by said apparatus after detection of said event.